



High-Pressure Ozone Pulse System

Oxidation Systems has developed a new ozone sparging process that injects a high-concentration, high-volume pulse of ozone gas into the subsurface. Our innovative ozone pulse technology produces a greater radius of influence and provides substantially greater mass transfer than conventional ozone sparging. The high concentration of ozone gas (up to 10% wt/wt) increases the solubility of ozone in water compared to conventional ozone sparging. This has the benefit of dissolving a greater percentage of the ozone into the water for direct oxidation of dissolved phase constituents. The net effect is an increase in the overall efficiency of the in-situ chemical oxidation process.

As the pulsed ozone gas initially moves into the saturated zone from the injection well, groundwater in the vicinity of the well is displaced. This displaced water moves horizontally and vertically from the injection well, creating a mounding effect in the vicinity of the well. When the pulse is terminated, the hydrostatic pressure imbalance causes water to flow back into the channels that had been filled with ozone gas. The net effect is a continuous cycle in which the water column is expanded, collapses, and is allowed to equilibrate for a period of time. This cycle creates a mechanical mixing between ground water and injected ozone. Mixing enhances contact between the oxidizer and the contaminants of concern, thereby increasing the overall efficiency of the process.



The ozone pulse-tank allows delivery of a large volume of concentrated ozone into the subsurface.



The system includes automated solenoid valves that allow pulses of concentrated ozone gas to be injected into eight sparge wells.

System Details

The Oxidation Systems ozone pulse trailer includes all equipment and controls necessary to inject 3.5 pounds per day of high concentration ozone gas into eight sparge wells at pressures as high as 75 psig. It includes an oxygen concentrator, an ozone generator, a stainless steel ozone pulse tank, eight automatic solenoid valves, a PLC based control system, and all of the necessary gauges, valves, and flow meters. Requires a 230 Volt, 60 Hz, 60 Amp, single-phase electrical service.